

Appl. No. 09/439,550
Amtd. dated 4/19/05
Reply to Office Action dated 02/28/05

II. REMARKS/ARGUMENTS

These Remarks are in response to the Office Action mailed February 28, 2005. No fee is due for the addition of any new claims.

Claims 1, 3-4, and 6-16 were pending in the Application prior to the outstanding Office Action. The Office Action rejected claims 1, 3-4, and 6-16. The present response amends claims 6 and 15, leaving for the Examiner's present consideration claims 1, 3-4, and 6-16. Applicant respectfully traverses the rejections. Reconsideration of the rejections is respectfully requested.

Although no objection was raised to the claims on grounds of indefiniteness under 35 U.S.C. § 112, Applicant has amended claim 6 to correct the first reference to refer to "a database" instead of "said database," thereby promoting greater definiteness. Similarly, although no objection was raised to the claims on grounds of indefiniteness under 35 U.S.C. § 112, Applicant has amended claim 15 to insert the word "and" prior to the last limitation in the claim, thereby promoting greater definiteness.

As a preliminary matter, Applicant respectfully notes that on p. 5, section 7, para. 6, in discussing the element of associating at least one data item relating to said centroid with each of said plurality of radials, the Office Action cites "col. 5, lines 57." Applicant assumes, and will proceed under the assumption, that the Office Action intends to state, "col. 5, lines 15-57." If Applicant is mistaken in this assumption, please advise us at your earliest convenience.

Claim 1 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Prabhakaran (U.S. Patent 5,904,727; hereafter, "*Prabhakaran*") in view of Chojnacki (U.S. Patent 6,366,851; hereafter, "*Chojnacki*"). Claims 3-4 and 6-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Prabhakaran* in view of *Chojnacki*, and further in view of Esposito (U.S. Patent 6,101,496; hereafter, "*Esposito*"). Applicant respectfully traverses the rejections.

It is respectfully submitted that the references cited in the Office Action, including *Prabhakaran*, *Chojnacki*, and *Esposito*, either singly or in combination, fail to disclose all of the limitations of claims 1, 3-4, and 6-16.

Regarding independent claim 1, the Office Action suggests (p. 2, section 7, para. 1) that *Prabhakaran* "teaches, in a computer, identifying a centroid (col. 3, lines 31-47)...." However,

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Applicant respectfully notes that this assertion contradicts the concessions by the Office Action (p. 3, section 8, para. 2, and again at p. 8, para. 2) that *Prabhakaran* and *Chojnacki* "fail[] to teach, in a computer, identifying a centroid..." In any event, the cited passage of *Prabhakaran* teaches that a computer-readable media including code receives a location of a vehicle, directs an output of a rasterized representation of a geographic area on a display, determines a vehicle icon from a plurality of different vehicle icons associated with the vehicle, outputs vector data from the vector database in response to the location of the vehicle, and directs an output of the vehicle icon on the rasterized representation on the display, in response to the location of the vehicle. By contrast, claim 1 teaches in a computer, identifying a centroid.

The Office Action concedes (p. 2, section 7, para. 2) that *Prabhakaran* "[does] not teach, defining a plurality of radials extending from said centroid and associating at least one data item relating to the centroid with each of said plurality of radials." However, the Office Action suggests (pp. 2-3, section 7, para. 2), "Computer code is well known in the art of computer programming and by definition is program instructions. Machine code consists of numerical instructions that the computer can recognize and execute and that were converted from source code." However, this very broad, general assertion by the Office Action is very far from the specific limitation in claim 1 of defining a plurality of radials extending from said centroid and associating at least one data item relating to the centroid with each of said plurality of radials.

The Office Action goes on to suggest (p. 3, section 7, para. 3) that *Chojnacki* discloses (col. 24, lines 52-67 and figs. 21C-21D) defining a plurality of radials extending from said centroid. However, *Chojnacki* discloses (col. 24, lines 52-60 and fig. 21C) that starting with the proto-shape point 604, a curvature at the point is determined and then, a radial line through this curve is determined. *Chojnacki* further discloses (col. 24, lines 60-67 and fig. 21D) that using the shift distance, a new data point is determined at the shift distance from the proto-shape point along the radial line, and the coordinates of the new data point are then stored. By contrast, the current claims disclose defining a plurality of radials extending from said centroid.

Subsequently, the Office Action suggests (p. 3, section 7, para. 3) that *Chojnacki* discloses (col. 7, lines 19-57) associating at least one data item relating to the centroid with each of said

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plurality of radials. However, *Chojnacki* discloses (col. 7, lines 19-47) that shape point data are stored in the data record that represents the road segment. *Chojnacki* further discloses (col. 7, lines 48-57) that the data record that represents the road segment includes shape point data identifying points located along a centerline of the represented road segment. By contrast, the current claims disclose associating at least one data item relating to the centroid with each of said plurality of radials.

The Office Action further suggests (p. 3, section 7, para. 3) that *Prabhakaran* shows a radial extending from a centroid in Figs. 2 and 5. However, *Prabhakaran* (fig. 2 and the associated text at col. 2, lines 26-46) discloses that the image is typically displayed on a raster-scan display screen and can include a map portion and a vector data portion which may be simultaneously displayed, alternatively displayed, may be displayed in different computer windows on the display, etc. *Prabhakaran* (fig. 5 and the associated text at col. 6, lines 57-63) discloses a display including a Vehicle Information Matrix (VIM) and a map window. The Office Action further suggests (p. 3, section 7, para. 3) that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to define at least one radial extending from the centroid and to associate at least one item relating to centroid with the plurality of radials and to modify in *Prabhakaran*." The stated motivation is that "such a modification would allow *Prabhakaran* to have a method or process of programmatically assigning x and y coordinates... to records, list and files containing location information... for cartographic or any other form of spatial analysis or reference. The Office Action cites (p. 3, section 7, para. 3) as further motivation for the combination its provision of the ability to map data in order to visualize information and explore relationships previously unavailable in strict database or spreadsheet analysis. Applicant respectfully traverses the suggestion that the claimed limitations would have been obvious to one having ordinary skill in the art at the time the invention was made. Applicant respectfully notes that the Office Action thereby engages in impermissible hindsight construction. Applicant respectfully further notes that such general observations regarding benefits of the invention demonstrate the novelty and patentability of the current claims while failing to offer any a priori motivation to modify *Prabhakaran* as suggested, let alone to, in a computer,

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identify a centroid; to define a plurality of radials extending from said centroid; and to associate at least one data item relating to said centroid with each of said plurality of radials.

Regarding independent claim 3, the Office Action concedes (p. 3, section 8, para. 2) that *Prabhakaran* and *Chojnacki* "fail[] to teach, in a computer, identifying a centroid; defining a plurality of radials extending from said centroid; defining a plurality of radials extending from said centroid; and associating at least one data item relating to said centroid with each of said plurality of radials." However, the Office Action suggests (pp. 3-4, section 8, para. 2) that *Esposito* "teaches... defining a plurality of radials extending from said centroid (col. 1, lines 46-66 and fig. 3-2). However, *Esposito* discloses (col. 1, lines 47-51) that the georeferenced library is compiled from a number of varied sources including US Census address information and US Postal address information, along with Zip Code boundaries and other varies sources of data containing geographic information and/or location geometry. *Esposito* further discloses (col. 1, lines 51-57) that if a raw data address cannot be matched exactly to a specific library street address, then an attempt is made to match the raw data address to an ever decreasing precision geographic hierarchy of point, line, or region geography until a predetermined tolerance for an acceptable match is met. *Esposito* further discloses (fig. 3-2 and associated text at col. 6, lines 28-30) that matched sets with the two highest precisions are sorted into ranged, and the remaining record are interpolated, if possible, to increase their precision. *Esposito* further discloses (fig. 3-2 and associated text at col. 6, lines 30-33) that the remaining, interpolated records are assigned to a given APG level, converted into street segments and then update the GL and provide enhanced street address products. By contrast, the current claims disclose defining a plurality of radials extending from said centroid.

The Office Action further suggests (pp. 3-4, section 8, para. 2) that *Esposito* "teaches... associating at least one data item relating to said centroid with each of said plurality of radials (col. 7, line 11 – col. 8, line 24). However, *Esposito* discloses (col. 7, lines 21-37) that the OIG process places the location of the raw data record in the block centroid or interpolates a street level segment closest to the correct similarly named street. *Esposito* further discloses (col. 7, lines 38-67) that using existing street segment coverages, we can extend segments using the high precision OIG location points as determinants in assigning which vector to add to as well as direction and size of the new

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street segment. *Esposito* further discloses (col. 8, lines 1-24) that the OID of both the high precision geocoded OI records and the positive matched records of the less precise OI records which have been assigned greater precision through the OIG process can be used to create a topological structure, giving direction and adjacency for creation of new street segments/vectors in the SSAD. By contrast, the current claims disclose associating at least one data item relating to said centroid with each of said plurality of radials.

The Office Action concedes (p. 4, section 8, para. 2) that *Prabhakaran* and *Chojnacki* "did not teach, interpolating positions on a respective radial, each said position corresponding to a given location." However, the Office Action suggests (p. 4, section 8, para. 3) that *Esposito* "discloses, interpolating positions on a respective radial, each said position corresponding to a given location (col. 1, lines 59-67, col. 2, lines 1-45, and col. 6, lines 22-41). However, *Esposito* discloses (col. 1, lines 59-67, col. 2, lines 1-6) that a record is assigned or geocoded to the centroid of the street path if the matching street address does not contain address ranges. *Esposito* further discloses (col. 2, lines 7-45) that ZIP centroid precision places geocoded records at a postal record ZIP Code centroid. *Esposito* further discloses (col. 6, lines 22-41) that after initial geocoding and processing of OI records, the computer selects all from the high precision [HP] street level geocoded records. By contrast, the current claims disclose interpolating positions on a respective radial, each said position corresponding to a given location.

The Office Action further suggests (p. 4, section 8, para. 3), "It would have been obvious to one having ordinary skill in the art at the time the invention was made to have interpolating positions on a respective radial each said position corresponding to a given location and placing a marker at each interpolated of [sic] the displayed respective radial and to modify in *Prabhakaran* and *Chojnacki*." The stated motivation is that "such a modification would allow *Prabhakaran* and *Chojnacki* to have geocoded OI records using current technology for various precision assignments." Applicant respectfully traverses the suggestion that the claimed limitations would have been obvious to one having ordinary skill in the art at the time the invention was made. Applicant respectfully notes that the Office Action thereby engages in impermissible hindsight construction. Applicant respectfully further notes that such general observations regarding benefits of the invention

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demonstrate the novelty and patentability of the current claims while failing to offer any a priori motivation to modify *Prabhakaran* and *Chojnacki* as suggested, let alone to, in a computer, identify a centroid; to define a plurality of radials extending from said centroid; to associate at least one data item relating to said centroid with each of said plurality of radials; to interpolate positions on a respective radial, each said position corresponding to a given location; and to place a marker at each interpolated position of the displayed respective radial.

Regarding amended independent claim 6, the Office Action concedes (p. 4, section 8, para. 5) that *Prabhakaran* and *Chojnacki* "fail[] to teach, in a computer, identifying a centroid wherein said identifying a centroid includes: identifying said centroid in a database of radials extending from said centroid; defining a plurality of radials extending from said centroid; associating at least one data item relating to said centroid with each of said plurality of radials, wherein said associating comprises; associating information in the database with the radials, said information relating to said radials." However, the Office Action suggests (p. 5, section 8, para. 6) that *Esposito* "teaches... identifying said centroid in [a] database (col. 5, lines 1-13). However, *Esposito* discloses (col. 5, lines 1-8) that when record 11 is added to the database, the ordered information is interpolated with the ordered information in record 1 to provide longitude and latitude for record 11. *Esposito* further discloses (col. 5, lines 9-13) that a location can be assigned to record 11 based on the enhanced data of record 1. By contrast, the current claims disclose defining a plurality of radials extending from said centroid.

The Office Action further suggests (p. 5, section 8, para. 6) that *Esposito* "teaches... defining a plurality of radials extending from said centroid; associating at least one data item relating to said centroid with each of said plurality of radials (col. 5, lines 15-57). [Note: the Office Action states, "col. 5, lines 57." Applicant assumes, and will proceed under the assumption, that the Office Action intends to state, "col. 5, lines 15-57." If Applicant is mistaken in this assumption, please advise us at your earliest convenience.] The Office Action further suggests (p. 5, section 8, para. 6) that *Esposito* "teaches... associating at least one data item relating to said centroid with each of said plurality of radials (col. 5, lines 15-57). However, *Esposito* discloses (col. 5, lines 15-22) that the operations are a combination of traditional geocoding, current database querying (SQL) and arithmetic and logical operations upon the

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OI and the GL. *Esposito* further discloses (col. 5, lines 22-30) that a unique combination of these functions produces additional x,y,(z) coordinate locations along with their associated address records. *Esposito* further discloses (col. 5, lines 31-57) that the most precise (usually street level) geocoded records are assigned to the highest possible precision small area geometry for the particular geocoded area. By contrast, the current claims disclose defining a plurality of radials extending from said centroid; and associating at least one data item relating to said centroid with each of said plurality of radials, wherein said associating comprises: associating information in said database with said plurality of radials, said information relating to said centroid.

The Office Action suggests (p. 5, section 8, para.7) that *Esposito* "teaches, storing said plurality of radials a database (col. 6, lines 17-25, and fig. 3-1 (21 & 22)." However, *Esposito* teaches (col. 6, lines 17-18, and fig 3-1 (21) and the associated text at col. 6, lines 17-18) that a database 21 is an existing GL of first records. *Esposito* further teaches (col. 6, lines 18-25, and fig 3-1 (22) and the associated text at col. 6, lines 18-33) that database 21 is an existing GL of first records. By contrast, the current claims teach storing said plurality of radials in a database.

The Office Action suggests (p. 5, section 8, para. 8), "It would have been obvious to one having ordinary skill in the art at the time the invention was made to store the radials in a database and to modify in Prabhakaran and Chojnack [sic]..." The stated motivation is that "such a modification would allow Prabhakaran and Chojnack to have street side placement and other location information based on anchor points which are known, precisely geocoded records within the OI data set." Applicant respectfully traverses the suggestion that the claimed limitation would have been obvious to one having ordinary skill in the art at the time the invention was made. Applicant respectfully notes that the Office Action thereby engages in impermissible hindsight construction. Applicant respectfully further notes that such general observations regarding benefits of the invention demonstrate the novelty and patentability of the current claims while failing to offer any a priori motivation to modify *Prabhakaran* and *Chojnacki* as suggested, let alone a computer-implemented method for virtual street addressing, comprising: in a computer, identifying a centroid, wherein said identifying a centroid includes: identifying said centroid in a database; defining a plurality of radials extending from said centroid; associating at least one data item relating to said centroid with each of said plurality of radials, wherein said associating

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comprises: associating information in said database with said plurality of radials, said information relating to said centroid; and storing said plurality of radials in a database.

Regarding independent claim 12, the Office Action suggests (p. 7, para. 3), “*Prabhakaran* teaches, in a computer, identifying a centroid; defining a plurality of radial extending from said centroid, wherein said defining a plurality of radials comprises: assigning a direction to each respective radial; associating at least one data item relating to said centroid with each of said plurality of radials.” However, Applicant respectfully notes that this assertion contradicts the concessions by the Office Action (p. 3, section 8, para. 2, and again at p. 8, para. 2) that *Prabhakaran* and *Chojnacki* “fail[] to teach, in a computer, identifying a centroid; defining a plurality of radials extending from said centroid; [and] associating at least one data item relating to said centroid with each of said plurality of radials.” Applicant respectfully notes that no citation is provided here for these propositions in *Prabhakaran*, although Applicant notes that a citation was provided in the discussion of claim 1. The passage of *Prabhakaran* cited for these propositions in the discussion of claim 1 (col. 3, lines 31-47; no passage is cited in the discussion of claim 12) teaches that a computer-readable media including code receives a location of a vehicle, directs an output of a rasterized representation of a geographic area on a display, determines a vehicle icon from a plurality of different vehicle icons associated with the vehicle, outputs vector data from the vector database in response to the location of the vehicle, and directs an output of the vehicle icon on the rasterized representation on the display, in response to the location of the vehicle. By contrast, claim 1 teaches in a computer, identifying a centroid.

The Office Action concedes (p. 7, para. 4) that *Prabhakaran* and *Chojnacki* “did not teach, calculating an endpoint for each respective radial, defining each respective radial from the centroid to its endpoint.” However, the Office Action suggests (p. 7, para. 4) that *Esposito* “teaches, calculating an endpoint for each respective radial, defining each respective radial from the centroid to its endpoint. (col. 7, lines 39-67, col. 8, lines 1-20 and lines 29-40, and fig. 5.)” However, *Esposito* discloses (col. 7, lines 39-67, col. 2, lines 1-6) *Esposito* further discloses (col. 7, lines 39-67) that using existing street segment coverages, we can extend segments using the high precision OIG location points as determinants in assigning which vector to add to as well as direction and size of

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the new street segment. *Esposito* further discloses (col. 8, lines 1-20) that the OIID of both the high precision geocoded OI records and the positive matched records of the less precise OI records which have been assigned greater precision through the OIG process can be used to create a topological structure, giving direction and adjacency for creation of new street segments/vectors in the SSAD. *Esposito* further discloses (col. 8, lines 29-40) that more precise x,y location assignments to S1 or 5 digit Zip centroid location assignments are made than location assignments available through traditional geocoding methods. Finally, *Esposito* further discloses (fig. 5 and the associated text at col. 7, lines 1-11) an example of how the invention improves a typical ZIP, centoroid hit to a street level hit and thereby improves the geocoding by relocating the position of the address more than two miles closer to its actual location. By contrast, the current claims disclose in a computer, identifying a centroid; defining a plurality of radials extending from said centroid, wherein said defining a plurality of radials comprises: assigning a direction to each respective radial; and: associating at least one data item relating to said centroid with each of said plurality of radials.

The Office Action further suggests (p. 4, section 8, para. 3), "It would have been obvious to one having ordinary skill in the art at the time the invention was made to calculate an endpoint for each respective radial, defining each respective radial from the centroid to its endpoint and to modify in Prabhakaran and Chojnack..." The stated motivation is that "such a modification would allow Prabhakaran and Chojnacki to have the number of pinpointed x,y (z) addresses in the geocoding georeferenced library with the ability to interpolate from the addresses near or the exact street containing the vector of the address ranges." Applicant respectfully traverses the suggestion that the claimed limitations would have been obvious to one having ordinary skill in the art at the time the invention was made. Applicant respectfully notes that the Office Action thereby engages in impermissible hindsight construction. Applicant respectfully further notes that such general observations regarding benefits of the invention demonstrate the novelty and patentability of the current claims while failing to offer any a priori motivation to modify *Prabhakaran* and *Chojnacki* as suggested, let alone to, in a computer, identify a centroid; define a plurality of radials extending from said centroid, wherein said defining a plurality of radials comprises: assigning a direction to each respective radial; associate at least one data item relating to said centroid with each of said plurality

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of radials; and calculate an endpoint for each respective radial, defining each respective radial from the centroid to its endpoint.

Regarding independent claim 15, the Office Action concedes (p. 8, para. 2) that *Prabhakaran* and *Chojnacki* "failed to teach, in a computer, identifying a centroid; defining a plurality of radials extending from said centroid; associating at least one data item relating to said centroid with each of said plurality of radials, wherein each data item is a location within an area associated with said centroid." However, the Office Action suggests (p. 8, para. 2-p. 9, para. 1), "It would have been obvious to one having skill in the art at the time the invention was made to have the associating at least one data item relating to said centroid with each of said plurality of radials, wherein each data item is a location within an area associated with the centroid and to modify in *Prabhakaran* and *Chojnacki*..." The stated motivation is that "such a modification would allow *Prabhakaran* and *Chojnacki* to have ZIP+4 centroids as a specific street level address in a raw data record. A centroid by definition is 'a two-dimensional figure or three dimensional solid. Thus the centroid of a two-dimensional figure represents the point at which if [sic] could be cut out of, for example sheet metal. The centroid circle or sphere is its cen [sic] generally, the centroid represents the point designated by the mean of the coordinates of all the points in a set.' Applicant respectfully traverses the suggestion that the claimed limitations would have been obvious to one having ordinary skill in the art at the time the invention was made. Applicant respectfully notes that the Office Action thereby engages in impermissible hindsight construction. Applicant respectfully further notes that such general observations regarding benefits of the invention demonstrate the novelty and patentability of the current claims while failing to offer any a priori motivation to modify *Prabhakaran* and *Chojnacki* as suggested, let alone to, in a computer, identify a centroid; define a plurality of radials extending from said centroid; associate at least one data item relating to said centroid with each of said plurality of radials, wherein each data item is a location within an area associated with said centroid.

Claims 4, 7-11, 13-14, and 16 each ultimately depend from one of the independent claims and are believed patentable for at least the same reasons as the independent claims and because of the additional limitations of these claims.

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Accordingly, claims 1, 3-4, and 6-16 are believed patentable over the cited references and withdrawal of the rejections is respectfully requested.

III. CONCLUSION

As amended, claims 1, 3-4, and 6-16 are believed patentable. Accordingly, withdrawal of the rejections is respectfully requested. It is respectfully submitted that all remaining claims, as amended in the subject patent application, should be allowable, and a Notice of Allowance is requested. The Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of the patent.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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